



# Northside High School

## Geometry Curriculum

### Unit 3: Transformations

Unit Length: 10 days

Domain: Congruence

- Cluster 1: Investigate transformations in the plane.
- Cluster 2: Understand congruence in terms of rigid motions.

Standards:

- \*HSG.CO.A.2:
  - Represent transformations in the plane (e.g., using transparencies, tracing paper, geometry software).
  - Describe transformations as functions that take points in the plane as inputs and give other points as outputs .
  - Compare transformations that preserve distance and angle to those that do not (e.g., translation versus dilation).
- HSG.CO.A.3:
  - Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.
- HSG.CO.A.4:
  - Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
- HSG.CO.A.5:
  - Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure (e.g., using graph paper, tracing paper, miras, geometry software).
  - Specify a sequence of transformations that will carry a given figure onto another.
- \*HSG.CO.B.6:
  - Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure.
  - Given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.
- HSG.CO.E.14 :
  - Apply inductive reasoning and deductive reasoning for making predictions based on real world situations using:
    - Conditional Statements (inverse, converse, and contrapositive).
    - Venn Diagrams Note: This is not intended to be an isolated topic but instead to support concepts throughout the course .

*\*Guaranteed Viable Curriculum*



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Vocabulary to Emphasize:

- Transformation.
- Translation.
- Reflection.
- Dilation.
- Rotation.
- Rigid Motion.
- Mapping.
- Congruent.

Essential questions: What is a definition for reflection, rotation, translation, and dilation? What is a rigid motion? How can you prove figures are congruent?

Learning Goal	Notes	Bellwork/Exit	Practice
<b>Students will develop definitions for transformations.</b>	Transformation Book* *resource from <a href="http://newellssecondarymath.blogspot.com/p/interactive-notebook-pages.html">http://newellssecondarymath.blogspot.com/p/interactive-notebook-pages.html</a> OR Transformation Notes	<b>BW:</b> <ul style="list-style-type: none"><li>• Pre-assessment.</li></ul>	
<b>Students will create their own geometric figure and transform it.</b>	Finish notes from previous day. Transformations Reference Sheet* *resource from <a href="http://newellssecondarymath.blogspot.com/p/interactive-notebook-pages.html">http://newellssecondarymath.blogspot.com/p/interactive-notebook-pages.html</a>  Pre-AP/Enrichment: Core Workbook Section 1-7.	<b>BW:</b> <ul style="list-style-type: none"><li>• Transformations #1.</li><li>• Blank graphs for bellwork all week.</li></ul>	Create Your Own Transformation Mini-Project.
<b>Students will apply transformations to real world logos and create their own.</b>	*Teacher note: will need computer carts for logo project and IXL, approx. Sept. 27- Oct 5th.	<b>BW:</b> <ul style="list-style-type: none"><li>• Transformations #2.</li></ul>	Logo Project: *adapted from <a href="http://www.mrsseteachesmath.com/2017/01/transformations-logo-project.html">http://www.mrsseteachesmath.com/2017/01/transformations-logo-project.html</a>  Pre-AP/Enrichment (hw): Transformations Practice A and B



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Learning Goal	Notes	Bellwork/Exit	Practice
Students will graph the image, find the coordinates, and write the rule for translations.		<b>BW:</b> <ul style="list-style-type: none"><li>• Transformations #3.</li></ul>	IXL Geometry L.1, L.2, L.3, L.4.
Students will graph the image and find the coordinates of reflections.		<b>BW:</b> <ul style="list-style-type: none"><li>• Transformations #4.</li></ul>	IXL Geometry L.5, L.6.
Students will graph the image and find the coordinates of rotations.		<b>BW:</b> <ul style="list-style-type: none"><li>• Transformations #5.</li></ul>	IXL Geometry L.8, L.9.
Students will graph the images of Compositions of transformations.		<b>BW:</b> <ul style="list-style-type: none"><li>• Transformations #6.</li></ul>	IXL Geometry L.10, L.12.
Students will graph the images, find the coordinates, and determine the scale factor of dilations.		<b>BW:</b> <ul style="list-style-type: none"><li>• Transoformations #7.</li></ul>	IXL Geometry L.13, L.14, L.15.
Students will review all transformations.		<b>BW:</b> <ul style="list-style-type: none"><li>• Transformations #8.</li></ul>	Transformations Mixed Review Worksheet.  Pre-AP/Enrichment: Extension Worksheet

\*CFA's will be recorded from IXL assignments

Unit 3 Common Summative Assessment

Unit 3 Pre-AP Summative Assessment



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<b>Unit 3 previous learning: Where do I start/What should they know?</b>	
4.G.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
4.G.3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
5.G.1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond.
8.G.1	Verify experimentally the properties of rotations, reflections, and translations: lines are taken to line, and line segments to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations: given two congruent figures, describe a sequence that exhibits the congruence between them. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.